



ST. MARY UNIVERIVERSITY SCHOOL OF  
GRADUATE STUDIES

**THE EFFECT OF BUSINESS PROCESS  
REENGINERING (BPR) ON PERFORMANCE OF  
WATER WORKS CONSTRUCTION ENTERPRISE  
(WWCE)**

By  
Sultan Mohammed

Jan. 2015  
Addis Ababa, Ethiopia

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A THESIS  
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**APPROVED BY BOARD OF EXAMINERS**

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### **Declaration**

I, the undersigned graduate student, hereby declare that this thesis is my original work undertaken under the supervision of Tilaye Kassahun (PhD), and it has not been presented for a degree in any other university and all sources of the materials used for this thesis have been duly acknowledged.

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## **LIST OF ACRONYMS**

<b>BPR:</b>	Business Process Re-engineering
<b>CSFs:</b>	Critical Success Factors
<b>IT:</b>	Information Technology
<b>ICT:</b>	Information and Communication Technology
<b>SPSS:</b>	Statistical Program for the Social Sciences
<b>WWCE:</b>	Water Works Construction Enterprise



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## **ABSTRACT**

Organizational processes today are markedly different than they were several years ago. Processes are what organizations do. When processes become old and inefficient and can't deliver results that they were originally designed to, they can't cope up the business dynamics in the environment in which they operate, they must be replaced. Business Process Reengineering (BPR) is a process-based management tool that can deliver, redesign or replace inefficient processes, as required, with a breakthrough results. As such it can be applied to a single process, a group of processes, or the entire processes comprising the organization. The Purpose of this study is to assess the effect of BPR on organizational performance of Water works construction enterprise (WWCE).

In the study, both quantitative and qualitative data collection methods were employed. The data for current study were obtained from primary and secondary sources.

The instrument used to gather data for quantitative study was questionnaire whereas for that of qualitative it was key informant interview. Documentary analysis was used to augment the primary data collection tools. Data were analyzed using descriptive statistics and inferential statistics.

The findings have revealed that after BPR implementation there were increased employees' satisfaction which may increase customer satisfaction and organizational performance.

Finding related to major changes after implementation of BPR in the view of Employees and the data obtained from the interview and document review, one can conclude that there were major changes regarding behavior, team work and management system; but regarding radical change in the study area it was seen only an incremental improvement. And also employees have given benefits regarding salary increment, compensation, and empowerment. However, in the enterprise, there is no implementation of strong performance evaluation system.

Based on the finding of the study it has been concluded that business process reengineering has become a useful weapon for any organization that is seeking for improvement in its current organizational performance and intends to achieve organizational objective. It is recommended that reengineering process remains effective tool for WWCE to achieve its objective and also organizations striving to operate effectively and efficiently.

# **CHAPTER 1**

## **INTRODUCTION**

### **1.2 Background of the study**

This thesis studies Business Process Reengineering (BPR) implementation in Water Works Construction.

Enterprise, specifically, it tries to study effects of BPR implementation in WWCE. BPR is one of the management tools that can help the organization for effective, efficient and economic performance through dramatic and radical redesign of old business processes. It can also help to contribute benefits to external stakeholders of the organization. Thus, studies on effect of BPR implementation have immense value to both practitioners and academicians.

WWCE is a state owned enterprise that has been engaged in the water resource development sector since 1980 G.C. specially, the enterprise has been executing safe water supply projects in different parts of the nation for the last three decades.

In recent years, WWCE has begun executing large scale and medium sized dam and irrigation projects in different regional states of the country in a bid to play an important role toward the growth of the national economy. Mekele, Nazret, Ziway, Gore, DebreZeit, Fiche, Shambu, Holeta, Awash, BahrDar, Akaki, Gonder, Bedele, Arsi Negele, Afar, Gambela, Hargele, Semera, Desse, and Nekemte water supply projects are some of the enterprises achievement, which had been executed in the past. Currently the enterprise is mainly executing dam and irrigation development projects.

The implementation of business process reengineering (BPR) program in WWCE had started in 2011. However, no pilot test was conducted and no evaluation has been made on

the effect of BPR so far. It is obvious that the stakeholders need to understand what an effect has had BPR on WWCE performance and take appropriate action.

In WWCE the biggest challenge would then be able to manage the service of balancing organizational performance measured in such as cost, quality, service and speed and also customer.

In today's service dominating world the foundations of any organization are the people and the processes. If people are motivated and working hard, but the business processes are not good and remain as non-value-adding activities , organizational performance will be poor (Peter & Sohal, 1999). As Lindet, (1994) stated that all organizations, whether service giving or manufacturing, are struggling to meet the tough and new competitive standards of the 1900s speed, quality, efficiency and increased productivity in order to become more competitive, and flexible to meet the desired standard.

In order to create a dramatic increase in efficiency, productivity, or profitability, a drastic change in the design of the organization's processes is required. That is why Graham says reengineering is a useful tool that has been adopted by and hailed as one of the current major drivers of change within many organizations (Graham, 2010). Business Process Reengineering is playing a vital role in the enhancement of productivity and efficiency of many organizations. A crowd of interrelated tasks that creates value is called a business process (Habib & Wazir, 2012).

Reengineering primary goals aimed at to reduce wastage, improve efficiency and ultimately reduce costs (Lotfollah et al., 2012). And an increase in consumer requirements for both product and service efficiency and effectiveness has resulted in Business Process Reengineering (Al-Mashir et al., 2001). Reengineering also helps organizations to throw away their old fashioned processes to achieve new heights of success (Jemal et al., 2011). Hammer and Champy, (1993) also stated that BPR focuses on processes and not on tasks, jobs or people. It endeavors to redesign the strategic and value added processes that transcend organizational boundaries. Since 2004, the government of Ethiopia has also endorsed Business Process Reengineering as a foundation for strengthening Result Based Performance Management System in the Civil Service organizations and the study for this

has begun in 2001/02 in Federal and Regional government institutions (Tesfaye Debela, 2009).

Executing large scale and medium sized dam and irrigation projects in different regional states of the country using old-fashioned processes that are scattered in pieces of tasks among various units of the enterprise, resulted to dissatisfy both the customers and service providers. Above all, those old-fashioned work practices lack to enhance the enterprise for effective, efficient and economic performances. Accordingly, the enterprise decided works have to be done through BPR.

### **1.3 Statement of the problem**

According to Balasubramanian, (2010), BPR means not only change but dramatic change. What constitutes dramatic change is the overhaul of organizational structures, management systems, employee responsibilities and performance measurements, incentive systems, skill development, and the use of information technology. BPR can potentially impact every aspect of how to conduct business today. Change on this scale can cause results ranging from enviable success to complete failure (Khuzaimah, 2011).

Business Process Reengineering offers one method for managing profoundly changed the way organizations do business during the past decade while at the same time making it possible to achieve dramatic gains in business performance. However, not all BPR projects have been successful in achieving dramatic performance gains (Shin and Donald, 2002).

- As lack of dramatic change is one of the major problems facing organizations now-a-days, reengineering has become an alternative mechanism for providing new working conditions to the organization and its employees who are previously not much actively participating to overcome the problem. Reasons for such a problem can be due to the fact that; senior management does not always have a clear vision of what the BPR effort intends to achieve, or how to gauge or monitor the success of the programmed objectives and lack of commitment and support (Graham, 2010).

In WWCE the biggest challenge would then be able to manage the service of balancing organizational performance measured in such as cost, quality, time and also customer desires along with maintaining the required employee's skills and

knowledge, behavior, attitude and team coordination. In fact these cost, quality, time, and also employee attitude and team coordination were seen as WWCE's major problem in achieving them in the past, before BPR implementation.

Hence the focus of this research is to evaluate the effect of BPR implementation in WWCE's in terms of cost, time and quality, the employees' skills, knowledge, behavior, and attitudes, and also employee incentives.

#### **1.4 OBJECTIVES OF THE STUDY:**

- To assess how Business Process Reengineering has had an effect on WWCE performance when measured in terms of cost, cycle time, and quality
- To assess how Business Process Reengineering affected employee's skills and knowledge, behavior, attitude and team coordination.
- To assess how management and employees benefited from a re-engineering process.

#### **1.5 SIGNIFICANCE OF THE STUDY:**

This study is significant:

- It is significant because the world is going towards the global competition, in this scenario most people try to understand the effect of reengineering on different variables like cost, cycle time, quality and customer satisfaction.
- By understanding the above factors WWCE could change its activities towards achieving its objectives in a meaningful manner. That is why this study is significant for the researcher, WWCE and customers.

#### **1.6 Limitation of the study**

- The quantitative data analysis is mainly on the data obtained from employee through questioners.
- The data was collected only from nearby projects because of resources, this limits the opinion of employees working at projects located far from Addis Ababa.

- The focus of the research is mainly on critical performance measures, such as cost, quality, and time.

## **1.7 Organization of the thesis**

The study report structured as follows. Chapter 1 introduction, Chapter 2 presents literature review with respect to the theoretical perspective of BPR. Chapter 3 provides the research design, in which it comprises the main principles of research methodology and the adopted research design for the study. Chapter 4 presents both the quantitative and qualitative features of mixed method results and analysis of findings. Finally, chapter 5 presents summaries of major findings, conclusions, and recommendations.



## **CHAPTER 2**

### **LITERATURE REVIEW:**

#### **2.1 Overview of Business Process Reengineering**

Based on the work of Maureen *et al.*, (1995) the idea of reengineering sketches its origin back to management theories built-up in the early nineteenth century and the aim of BPR is to revamp and modify the on hand business practices or processes to attain remarkable development in organizational performance.

During the industrial age of mass production, organizations and companies were built around Adam Smith's brilliant discovery of: 'work should be broken down into its simplest components and be assigned to specialists (the notion of division of labor and specialization)'. The new world requires organizations to build working system that can make them responsive, flexible and customer focus. The fragmentation and traditional bureaucratic organization of mass production era do not fit to these requirements.

These new feature of organization (responsiveness, flexibility and customer focus) achieved in new perspective shift the approach of work from task based to process based thinking. Now, the conclusion above tells us that any organization which hopes to thrive in today's world must shift approach to work and organization to process centering in order to provide seamless services. The key issue raised here is then the way to transform to seamless government and process centering.

Business Process Reengineering has risen during the early 1990s as an approach mainly developed by practitioners. It gained prominence in the work of writers such as Davenport and Short (1990), Hammer (1990), Hammer and Champy (1993), the concept is currently very topical and ubiquitous in many organizational, management and information technology literature.

According to BerihuAssefas' (2009) work, Business Process Reengineering began as a private sector technique to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors. According to Al- Mashari, (2001) an increase in consumer requirements for both product and service efficiency and effectiveness has resulted in BPR. Since the 1990s Process Redesign or Business Process Reengineering has been embraced by organizations as a means to cut non-value-added activities (Grover &Malhotra, 1997). A number of studies in the literature present the improvements, radical as well as incremental, resulting from BPR (Hammer, 1990). As stated by Hammer and Champy, (1993) the reengineering of business processes is concerned with fundamentally rethinking and redesigning business processes to obtain dramatic and sustaining improvements in quality, cost, service, lead-times, outcomes, flexibility and innovation which guarantee the performance of the organization in the world of competition that is why Reengineering has become a fairly accepted approach today in the reform efforts of any organizations. Hence the focus of this research is to evaluate the effect of BPR implementation in WWCE's in terms of cost, time and quality, the employees' skills, knowledge, behavior, and attitudes, and also employee incentives. BPR has been implemented in both service and manufacturing firms in different countries around the world (Shin and Jemella, 2002). Successful implementation of BPR brings many benefits to the organization and it increases customer satisfaction, increased productivity, higher flexibility, increased employees satisfaction and improved coordination, and improved competitive advantage are the main benefits of successful BPR implementation. BPR helps organizations to achieve new heights of success by dramatically changing existing business processes (Holland and Kumar, 1995).

## **2.2 Elements of Business Process Reengineering**

Redesign can be achieved in two modes: incremental and radical. Incremental change can be classified methodologies for improvement and simplification. These methodologies aim at improving what already exists in the organization usually by eliminating non value

added activities in order to achieve lower throughput times and best re-allocation of resources (Grover et al, 1993). In the latter case the redesign or rebuilding of the processes will usually emerge from the application of “best practices” that is achieved with the use of benchmarking. In radical change redesign will challenge the existing organizational framework and might request the introduction of new technology regardless of the impact this might have on the personnel’s behaviours and attitudes (Grover et al, 1993).

BPR by definition radically departs from other popular business practices like Total Quality Management, Lean Production, Downsizing, or Continuous Improvement. According to Talwar (1993) BPR is “the ability to rethink, restructure and streamline the business structures, process, methods of working management systems and external relationships through which we create and deliver value”. Attaran and Wood (1999) commented that “the overall theme of BPR is the quest for improvement through quick and substantial gains in the organizational performance”.

Although, there is an element of commonality in all of these definitions, there are some key differences between them: Hammer and Champy (1993) emphasize on cost, quality, service and speed; Talwar (1993) places the emphasis on the ability to restructure the business process; Davenport (1993) placed emphasis on the analysis and design of work-flows; while Grover (1993) identified the following as common features of BPR programmes; Attaran and Wood (1999) place the emphasis on organizational performance. BPR combines analysis and modeling of business processes with advanced information technologies; Involves the radical redesign of business processes; typically employs Information Technology as an enabler of new business processes; Attempts to achieve organizational level strategic outcomes; and Tends to be interfunctional in its efforts.

The normative studies are conceptual in approach and conducted mainly by practitioners in BPR, the studies highlight the importance of BPR, both to the functional areas of the organization, as well as the overall organization. It also provides suggestions for institutionalizing BPR strategies.

Normative suggestions for BPR include: the need for a proactive rather than a reactive approach to implementing BPR (Senior, 2002); factors to be taken into account when implementing BPR; examples of how companies have successfully institutionalized BPR;

importance and benefits of BPR implementation. This stream covers a medley of studies whose main thrust is to emphasize the importance of BPR.

Business process reengineering consists of eight “rules” for the improvement of processes drawn from the principles of reengineering as proposed by Hammer and the characteristics of a reengineered process suggested by Hammer and Champy (1995). The rules form a framework for undertaking BPR, they include: Organize processes around outcomes not tasks; Have those who use the output of the process perform the process; Treat geographically dispersed resources as though they were centralized creating hybrid centralized/decentralized organizations; Link activities in a natural order and perform them in parallel; Perform work where it makes most sense, particularly, decision making, information processing, checks and controls making them part of the process; Capture information once and at the source, minimizing reconciliation; Combine several jobs into one possibly creating a case manager or case team as a single point of contact and Create multiple versions of processes when appropriate.

According to Ranganathan and Dhaliwal (2001), organizations apply business process reengineering for various reasons. There are factors that compel organizations to reengineer and they can be categorized into two: external factors and internal factors. Internal factors exert pressure from within the organization and include the following: the need to improve technology or automate; the need to increase efficiency; the need to reduce cost; and the need to define or redefine strategic focus. The external factors on the other hand exert pressure on the organization from the outside include: customers; competitors; changing industry or market conditions; and Governmental regulations/political pressures.

As Hammer and Champy (1993) noted, the customer today has the upper hand in the consumer/producer relationship. With the introduction of so many product choices in the market, the customer now dictates what to produce, the quality of the product, and the price he or she is willing to pay. Competition is another factor that exerts pressure on companies to change. Today, not only must a company match domestic competition in order to survive, it must also be able to deal effectively with global competitors that offer low-priced products with high quality and service (Rose and Lawton, 1999). Changing industry or market conditions cause companies to adapt or die.

The difference between the changes happening today and the changes of yesterday is that the pace of change has accelerated considerably. Government regulations or political pressures may compel organizations to respond accordingly. Such responses may be minor adjustments or could entail an overhaul or revamping of an entire business process (Grover et al,1995).

The deployment of technological assets and resources by organizations in order to achieve differentiation makes the difference in whether an organization remains competitive or obsolete, organizations need to be technology enabled in order to survive or prosper (Akhavan et al, 2006).

Organizations must also seek ways and means of becoming more efficient and productive. Davenport (1993) deduced the areas of improvement are derived from improving on time performance, reducing defect rates, increasing accuracy of quotes, eliminating repetitive tasks, reducing turnaround time, speeding up product development and improving human resource practices. The inability to manage costs has driven many organizations out of business, as markets saturate and global competition intensifies, cost control becomes critical for every organization. Kaplan (2005) postulated organizations undertake business process reengineering because of the need to redefine their strategic focus.

## **2.3 Various BPR interventions**

Even though BPR is widely adopted, BPR has in many instances failed to deliver its intended objectives. The general findings indicate that US companies are somehow ahead in the level of awareness and familiarity with different BPR tools and methods, due to past experience. As referenced by the results of Sockallingam and Doswell (1996)'s empirical study in Al-Mashari et al. (2001), US companies outweigh others in relation to levels of commitment, awareness, and consideration regarding BPR (Al-Mashari, et al., 2001).

Debela (2009)'s study looked at what the issues are and the payback of putting in place the BPR in the civil service companies. Secondly, it posed the question, whether it is moral to make employees the subject matter of reengineering and lastly, what type of change could the Ethiopian organizations bring about post BPR implementation? It was concluded by the

researchers that in considering the human resources and the technological ability of the organizations (Emerie, 2012), BPR can bring forward the incremental payback and progressive transformation instead of major change for a predictable future.

Sidikat and Ayanda (2008) and Aregbeyen (2011)'s study looked at assessing the impact of re-engineering of the day-to-day processes on the performance of the Nigerian Banks. The researchers agreed that BPR has become a useful weapon for any company that is striving for continuous improvement in performance. However, Aregbeyen (2011) later discovered that BPR projects substantially enhanced the profit performance but not for the expansion of its financial enhanced the profit performance but not for the expansion of its financial transition. On the other hand, Emerie (2012) developed and empirically tested a research replica which assessed whether the BPR implemented by state enterprises contributes to the company's wider performance. The findings indicate that public enterprises in a developing economy can utilize the BPR to improve their company performance if they have built-up a stock of BPR-relevant resources and capabilities, have executed the BPR with enough depth, are just beginning post-BPR complementary competencies, which are necessary to maintain and further increase the BPR changes, and have successfully alleviated the negative results of BPR implementation problems.

Habib and Shah (2013) had different view to Emerie(2012)'s, because their study was aimed at collecting and reviewing the work done thus far in the BPR field. This includes a comprehensive summary BPR concepts, frameworks, approaches, outcomes, failures and successes causes. It was concluded by the researchers that there is no common approach to the BPR, nor can it be sure that BPR will ensure the organizational success.

In evaluating the performance of organizations that have implemented BPR, Al-Mashari et al. (2001) found that most of US companies are somehow ahead in the level of awareness and familiarity with different BPR tools and methods, due to past experience and as referenced by Sockallingam and Doswell (1996) in Mashari et al. (2001) ,it shows that these companies outweigh others in relation to levels of commitment, awareness, and consideration regarding BPR. Debela (2009) and Emerie (2012) can attest to this. With regard to the human resources and the technological abilities of the organizations, BPR can increase the incremental payback and progressive transformation, instead of major change, for future to come, as foreseen. However, Habib and Shah (2013) had a different view to

Emerie(2012)'s study, where they claimed that there is no common approach to the BPR nor can it definitely be said that BPR will ensure the organizational success.

It seems like the majority of researchers agree that BPR has become a useful weapon for any company that is striving for continuous improvement in terms of performance and that there is no common approach in BPR implementation.

## **2.4 Factors for Implementation of Business Process Reengineering**

Ahmad et al (2007) estimated that as many as 70 percent of organizations do not achieve the dramatic results they seek by implementing BPR initiatives. As a result, the implementation process is complex, and needs to be checked against several success/failure factors to ensure successful implementation, as well as to avoid implementation pitfalls.

The various dimensions of the critical success factors (CSFs) for BPR have been highlighted by Al-Mashari and Zairi (2000), including change management, management competency and support, organization structure, project planning and management, and information technology infrastructure. Leadership and top management support have been viewed as the drivers for BPR (Ahmad, 2007); top management is considered as interrelated and necessary in all CSF factors for BPR. Among the main success factors are ambitious objectives, the deployment of a creative team in problem solving, and a process approach and integration of electronic data processing.

According to Simons (1999) change management involves all human- and social-related changes and cultural adjustment techniques needed by management to facilitate the insertion of newly designed processes and structures into working practice and to deal effectively with resistance.

The most important factors relating to change management and culture include: revision of reward systems, effective communication, empowerment, people involvement, training and education, creating a culture for change, and stimulating receptivity of the organization to change. Organizational culture influences the organization's ability to adapt to change.

Ahmad et al (2007) proposes that an organization must understand and conform to the new

values, management processes, and the communication styles that are created by the newly-redesigned processes so that a culture which upholds the change is established effectively. Al-Mashari and Zairi (2001) suggests that successful BPR implementation is highly dependent on an effective BPR programme management which includes: adequate strategic alignment; effective planning and project management techniques; identification of performance measures; adequate resources; appropriate use of methodology; external orientation and learning; effective use of consultants; building process vision; effective process redesign; integrating BPR with other improvement techniques and adequate identification of the BPR value. Information communication and technology (ICT) is also critical to the implementation of BPR initiatives.



## **CHAPTER 3**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Research design**

There are three types of research design: quantitative, qualitative and mixed methods.

Quantitative research is a means for testing objective theories by examining the relationship among variables. On the other hand, qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem.

Between the two strands, mixed methods research is an approach that combines or associates both quantitative and qualitative designs to inquire an issue (Creswell 2009, pp.4). However, the author noted that the selection of a research design involves the considerations of the worldview assumptions the research brings to study, the nature of research problem, procedures of inquiry, the researcher's experience, audiences for the study, type of data and collection methods, analysis and interpretation.

As tried to indicate the types of research design and their meaning previously, quantitative and qualitative designs have distinct characters, while mixed methods design shares the characters of both designs. The research design involves the interactions of philosophical worldview, strategies of inquiry, and specific methods for the quantitative, qualitative and mixed methods design (Creswell, 2009, pp.5). The following sections reviewed the aforementioned characters for each type of research designs in which it helped to adopt the fitted research method for this study. Quantitative research design possesses the post positivist worldview assumption that encompasses deterministic philosophy" in which causes probably determine the effect and "reductionist philosophy" to reduce the ideas into a small, discrete set of ideas to test variables that comprise hypotheses and research questions.

Post positivism develops knowledge based on objective observation and measurement as well as verifies theories that govern the world (Swanson and Holton, 2005, pp.19).

Quantitative design employs strategies of inquiry such as survey and experiment, and collect data through standardized instruments that are close-ended question and numeric data. Using statistical method, it generalizes about the population from the sample (Swanson and Holton, 2005, pp.32). Qualitative research design possesses social constructivism worldview assumptions that holds individuals seek to understand the world in which they live and work. The participant views relied on participants to construct meanings and the researcher inductively develops theory or pattern of subjective meaning (Creswell, 2009, pp.8). Qualitative research design tries to assess experiences and events contextually within the participants' natural setting. It employs strategies of inquiry like ethnographies, grounded theory, case study, phenomenological research and narrative research and collect data through observation, interviews, text and image data that are open-ended and emerging. The findings are subjective that the inquirer inductively generates meanings from the data collected in the field (Creswell, 2009, pp. 11-13). Mixed methods design possesses the pragmatic worldview that focused on the research problem for the consequence of actions. Pragmatic worldview uses pluralistic approach to drive knowledge about the problem. Accordingly, researchers have a freedom to choose the methods, techniques, and procedures of research that best suits the purposes of the study. Thus, mixed method design involves philosophical assumptions to use the mix of quantitative and qualitative designs (Nagy, 2010, pp.3). It employs strategies of inquiry such as sequential, concurrent and transformative mixed method and both close and open ended, standardized and emerging, quantitative and qualitative data collected. In general, quantitative and qualitative designs have their own inherent advantages and disadvantages. Although the advantages and disadvantages of them not discussed here, mixed methods design emanated to utilize the advantages and to tackle the disadvantages of the two designs. As cited in Creswell (2009, pp.14), the concept of mixing different methods originated in 1959, when Campbell and Fisk used multi-methods to study validity of psychological traits.

The reasons for mixing methods includes to triangulate data source for the sake of convergence across quantitative and qualitative methods; to integrate or combine the quantitative and qualitative data to identify participants or questions to ask for the other

method or to reinforce each other; or transformative to advocate marginalized groups (Nagy, 2010, pp.3-6).

Having the above summarized reviews of research designs, several studies on BPR in terms of research design, used quantitative and qualitative designs. This study also adopted mixed methods design to get the benefits of mixed methods design. The following sections discussed the method adopted.

### **3.2 Research method adopted**

As indicated earlier, to get a brief understanding of the research problem and to benefit from the method adopted, mixed method design has been used to study the effect of BPR. This strategy characterized by the collection and analysis of qualitative data obtained from document review followed by collection and analysis of quantitative data in the first phase of research further followed by the collection and analysis of qualitative data in the second phase that builds on the result of the initial quantitative results (Swanson and Holton, 2005, pp.321). In the first phase of the study, survey was conducted and documents were reviewed to identify the effect of BPR implementation, and in the second phase, based on results of the first phase, interviews were held to better understand the magnitude of the effect.

### **3.3 DATA SOURCES AND METHODS:**

In conducting this research the researcher used both primary and secondary sources of data as shown on Table 3.1 below. The questionnaire was used to obtain factual information, opinions, and attitudes from respondents.

The questionnaire contains closed questions. Data also gathered through interview and document review. The researcher prepared and conducted questioners and interviews. Also the researcher reviewed various documents by employing documentary analysis method. The documents reviewed are indicated on Table 3.1 below.

**Table 3.1: people interviewed and documents reviewed**

<b>Objective</b>	<b>Documents reviewed (secondary source)</b>	<b>People Interviewed and sampling techniques (primary source)</b>	<b>Questionnaires and sampling techniques (primary source)</b>
O1	- Annual plans and performance reports, and BPR documents.	<p>- Managers, employee and key customer from head office and two projects.</p> <ul style="list-style-type: none"> <li>• 8 process owners, two project managers, 26 employees and key customer from head office and two projects.</li> <li>• Non probability purposive sampling method used to select process owners and employees for interview (most of them BPR and implementing team members)</li> </ul>	<p>Employees from head office and two projects.</p> <ul style="list-style-type: none"> <li>• Non-Probability cluster sampling to select two among nine projects</li> <li>• Systematic random sampling, to select 276 employees from head office and two projects</li> </ul>
O2	- Annual plans and performance reports, and BPR documents.	<p>- Managers, employee, and key customers from head office and two projects.</p>	<p>Employees from head office and two projects.</p> <ul style="list-style-type: none"> <li>• Non-</li> </ul>

		<ul style="list-style-type: none"> <li>• 8 process owners, two project managers, 26 employees and key customer from head office and two projects.</li> <li>• Non probability purposive sampling method used to select process owners and employees for interview (most of them BPR and implementing team members)</li> </ul>	<p>Probability cluster sampling to select two among nine projects</p> <ul style="list-style-type: none"> <li>• Systematic random sampling, to select 276 employees from head office and two projects</li> </ul>
O3	- Annual plans and performance reports, key customer and BPR documents.	<p>- Managers, employee, and key customers from head office and two projects.</p> <ul style="list-style-type: none"> <li>• 8 process owners, two project managers, 26 employees and key customer from head office and two projects.</li> <li>• Non probability</li> </ul>	<p>Employees from head office and two projects.</p> <ul style="list-style-type: none"> <li>• Non-Probability cluster sampling to select two among nine projects</li> <li>• Systematic random</li> </ul>

		purposive sampling method used to select process owners and employees for interview (most of them BPR and implementing team members.	sampling, to select 276 employees from head office and two projects
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### 3.4 Primary data collection

The primary data were collected through questionnaire. As shown above in table 3.1.

### 3.5 Secondary data collection

Regarding secondary source, annual plans and performance reports and BPR documents were reviewed.

### 3.6 Sampling

In this study the sample size was derived from standardized survey software considering 95% confidence level and 5% of error margin. Accordingly 276 from the total of 1000 employees were selected.

The following formula is used to calculate the sample size because according to Adams et.al , (2007) it is the best method.

Where:

$Z = 1.96$  value for selected alpha value of .025 in each tail (95% degree of confidence)

$p * q$  estimate of variance  $= 0.25 = (0.5 * 0.5)$

d= acceptable margin of error for proportion being estimated, 5%= 0.05

After substituting all the above parameter values we get the following value for NO,

$$No = 1.96^2 * \frac{0.5 * 0.5}{0.05^2}$$

Then No = 384 ..... initial sample size

However this, No should be corrected to N according to the following equation

$$N = \frac{No}{1 + \frac{No}{population}}$$

Then after substituting, No = 384 into equation and population = 1000 we get the value

$$N = 276$$

- Probability cluster sampling was used to select 2 among nine projects in addition to head office.

### **3.7 METHOD OF DATA ANALYSIS:**

The quantitative data gathered through questionnaire analyzed by employing the computer software known as Statistical Package for Social Science (SPSS version20). The descriptive statistical methods such as frequency and percentage were used. The data obtained through interview and document review were analyzed qualitatively as described in the next paragraph.

In data analysis phase of a research, the researcher used both quantitative and qualitative data analysis methods. The data obtained through questionnaire were analyzed using quantitative method and SPSS software was applied for this purpose. Conversely for qualitative data analysis content analysis method used to analyze and describe the data obtained through structured interview and document review. Categorizing, unitizing and recognizing the data relationship allowed the researcher to interpret and identify important themes in depth.

## CHAPTER 4

### PRESENTATION, ANALYSIS AND INTERPRITATION OF DATA

This chapter presents the analysis and findings of the study. It provides general information of the sample studied. The necessary data involved in the study were obtained mainly from employees, and documents of WWCE.

#### 4.1 Response Rate

A sample of 276 employees was selected through random sampling technique, out of which 144 questionnaires were managed. The screening of the questionnaires was done and four questionnaires were rejected. The analysis was thus done using 140 questionnaires representing 51% response rate.

#### 4.2 Demographic Information

The demographic information considered in the study was the respondents' gender, age, and level of education.

##### 4.2.1 Respondents Gender

Respondents were to indicate their gender. The data was analyzed and the results are shown in Table 4.1: it was found that 84.3 were male and 15.7% were female. The difference of the respondent's gender could be attributed to male dominance. At least there was representation of both genders in the survey.

**Table 4.1: respondent's gender**

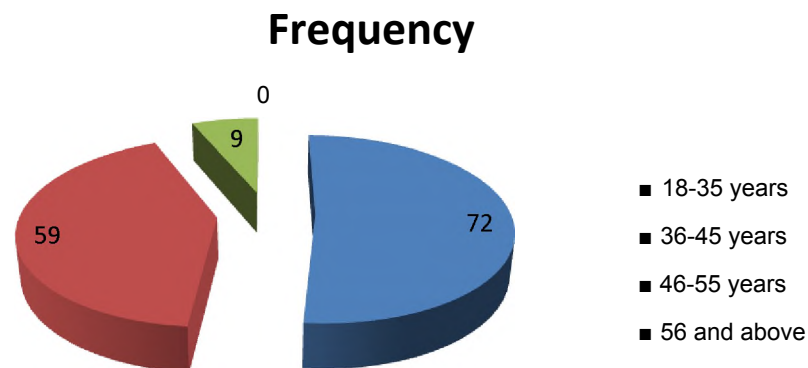
Gender	Frequency	Percentage
Male	22	15.7
Female	118	84.3
Total	140	100



**Table 4.2: Respondent's age**

Age	Frequency	Percentage	Cumulative percentage
<b>18-35 years</b>	72	51.4	51.4
<b>36-45 years</b>	59	42.1	93.5
<b>46-55 years</b>	9	6.5	100
<b>56 and above</b>	0	0	100

**Graph 4.1: respondent's age**



Respondents were to indicate their age. The data was analyzed and the results are shown in Table 4.2. It was found that 51.4% of the respondents are were aged between 18- 35 years, 42.1% between 36 - 45 years, 6.5% between 46 - 55 years, and no one were aged above 56 years. The age distribution shows that ages between 18 and 35 years comprise most of the employee at WWCE, whilst employees aged 56 years and above are the least.

#### **4.4 Respondents Level of Education**

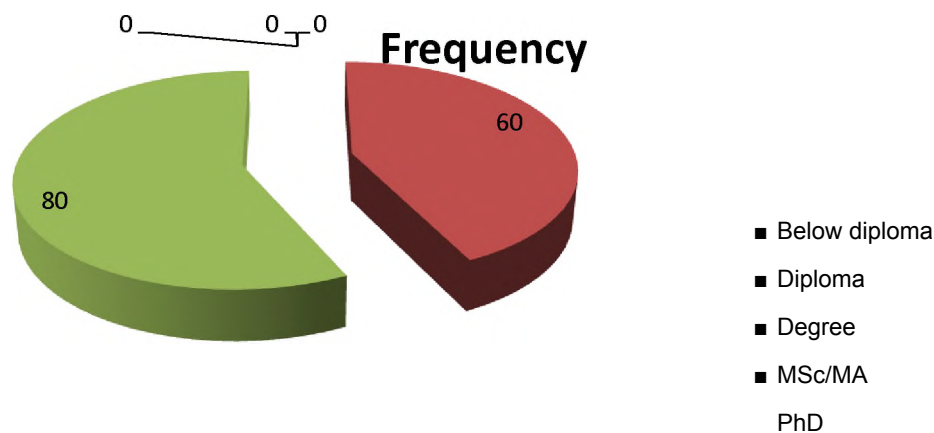
Respondents were to indicate their level of education. The data was analyzed and the results are shown in Table 4.3. It was found that 0% of the respondents had below diploma education, 42.9% had diploma, 57.1% had university degree, and none of them had post

graduate degree. This shows that majority of the respondents have university education and 57.1% of the total respondents have at least university education.

**Table 4.3: Level of education**

Level of Education	Frequency	Percentage	Cumulative percentage
Below diploma	0	0	0
Diploma	60	42.9	42.9
Degree	80	57.1	100
MSc/MA	0	0	100
PhD	0	0	100

**Graph 4.2: level of education**



## Effect of BPR Implementation

### 4.5 Respondents' expectation on major improvements after BPR

The first objective of the study sought to reveal that how Business Process Reengineering has had an effect on WWCE performance when measured in terms of cost, cycle time, and quality

The respondents were required to rate the effect. A Likert scale of 5 was used to capture the data as follows:

1. Strongly agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

The higher the mean score, the lower was the effect. Standard deviation was used to determine the varying degrees of the respondents' perception of the effect as a result of BPR implementation. From the respondents who filled the questionnaire the results are displayed in the tables and graphs below:

Q1. Cost reduction of the processes expected as a result of implementing the redesigned processes:

**Table 4.4: cost reduction expected**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	14	10.0	10.0	10.0
Agree	45	32.1	32.1	42.1
Neutral	35	25.0	25.0	67.1
Disagree	26	18.6	18.6	85.7
strongly disagree	20	14.3	14.3	100.0
Total	140	100.0	100.0	

**Graph 4.3: cost reduction**

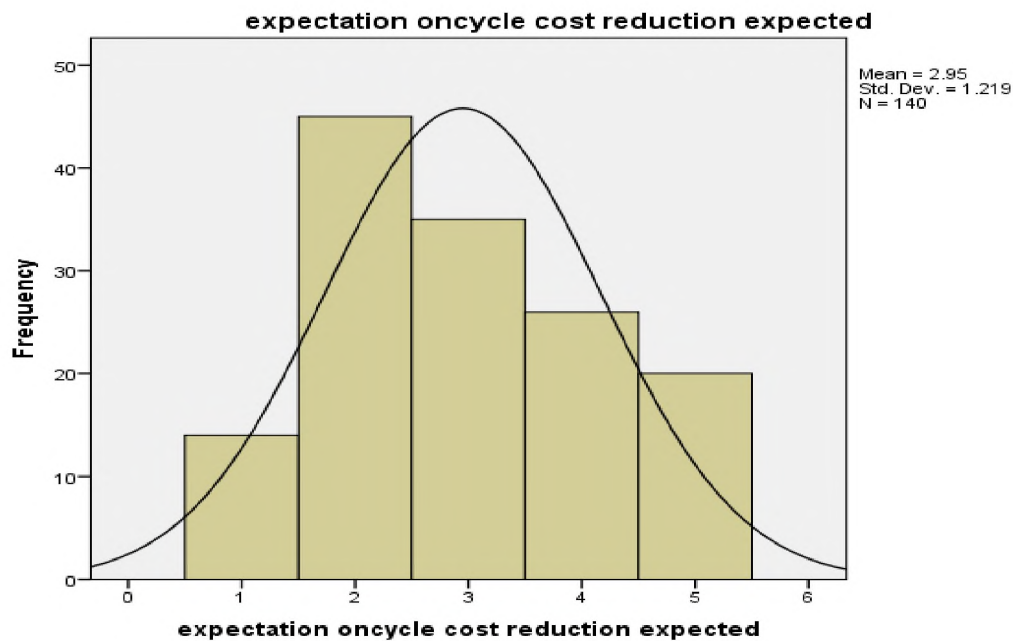


Table summarizes the various effects of BPR in the organizational performance and employees' expectation after the implementation of BPR.

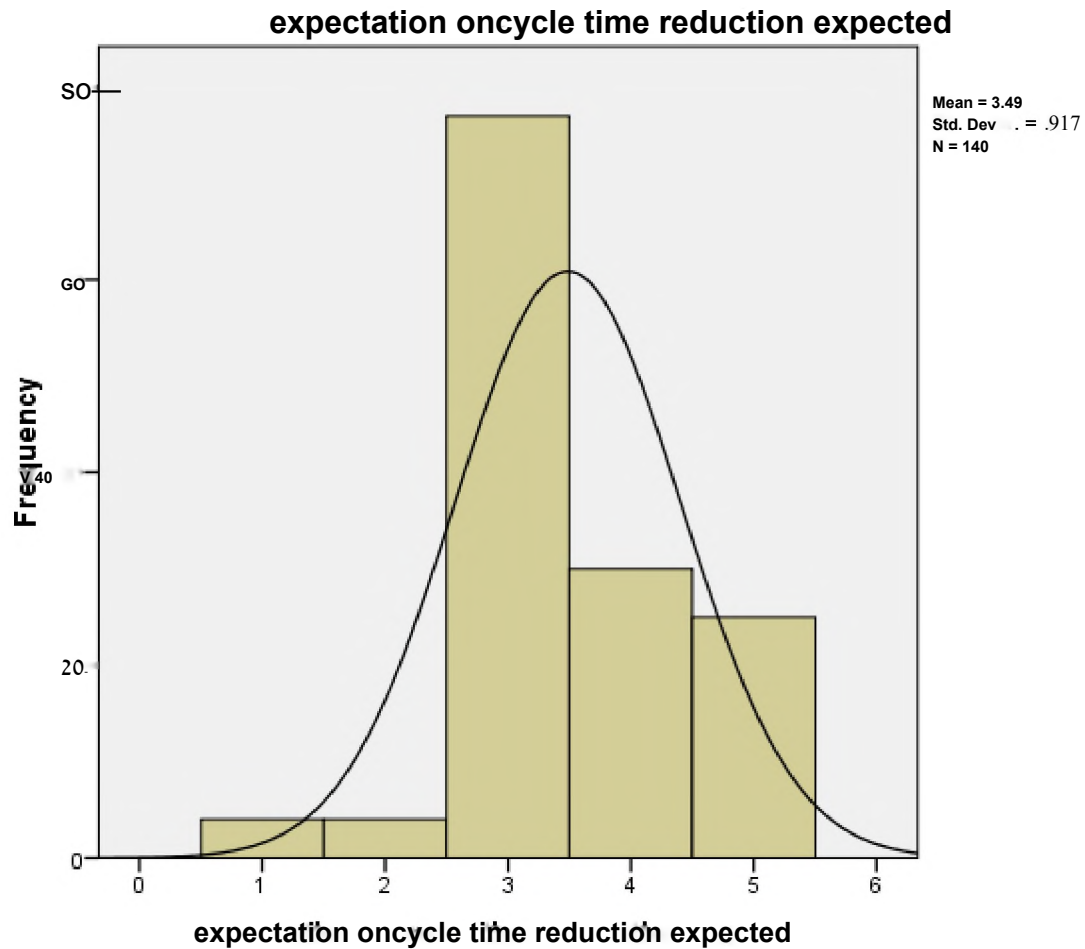
Hence, the first item aims at knowing whether major improvements have been made on cost. Accordingly Table 4.4 shows, 45 (32.14%) of employees and 14 (10%), total 59 (42.1%) respondents, assured that major improvements have been made on cost.

Q2. Process cycle time reduction expected as a result of implementing the redesigned processes:

**Table 4.5: cycle time reduction**

expectation on cycle time reduction expected				
	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	4	2.9	2.9	2.9
Agree	4	2.9	2.9	5.7
Neutral	77	55.0	55.0	60.7
Disagree	30	21.4	21.4	82.1
strongly disagree	25	17.9	17.9	100.0
Total	140	100.0	100.0	

**Graph 4.4: cycle time reduction**



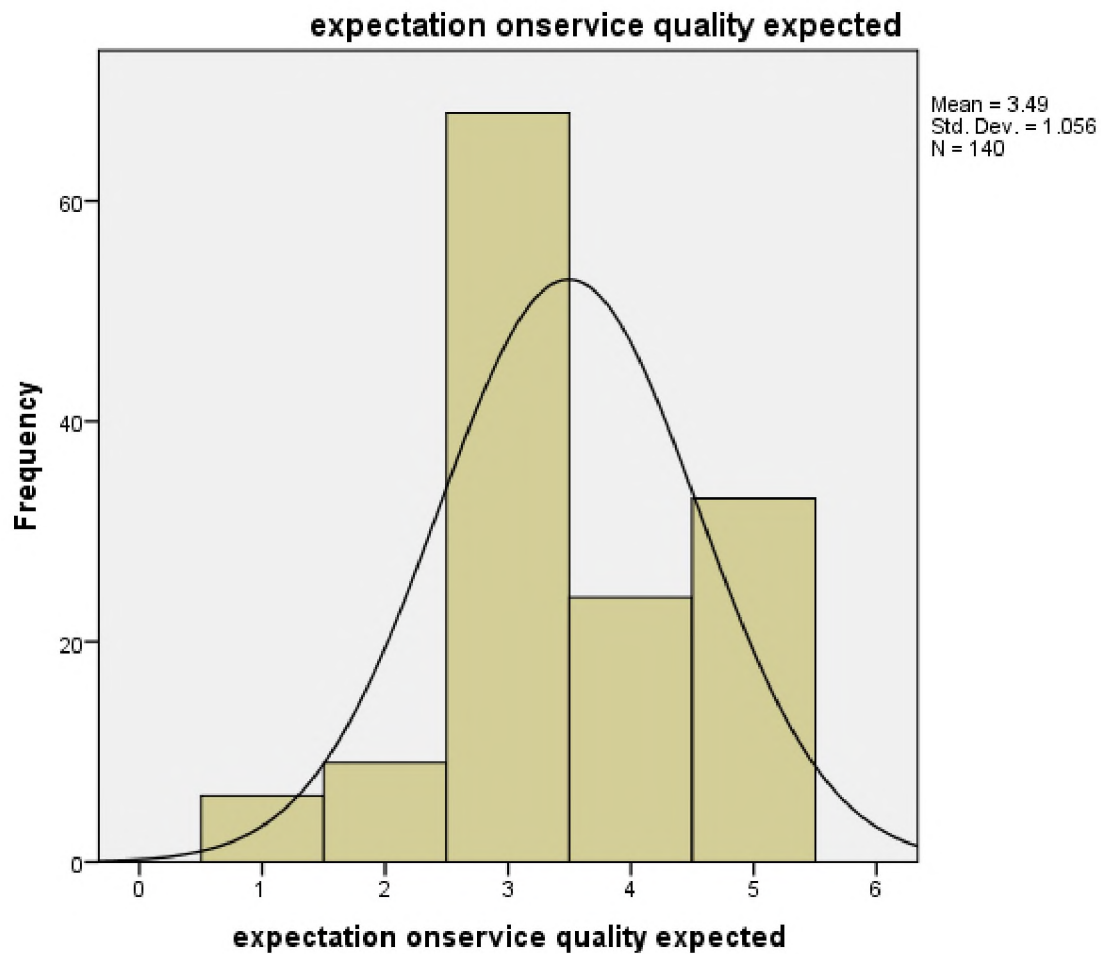
As shown in Table 4.5 respondents 4 (2.86%) employees and 4 (2.86%), totally only 8 (5.7%) respondents agreed that major improvement on time observed after the implementation of BPR.

Q3.Increased service quality expected as a result of implementing the redesigned processes:

**Table 4.6: expectation on service quality expected**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	6	4.3	4.3	4.3
Agree	9	6.4	6.4	10.7
Neutral	68	48.6	48.6	59.3
Disagree	24	17.1	17.1	76.4
strongly disagree	33	23.6	23.6	100.0
Total	140	100.0	100.0	

**Graph4.5 quality expected**



This item was to check if major improvements on service quality have been made or not. Accordingly as shown in Table 4.6, only 15(10.7%) employees' respondents agreed that there were major improvements on service quality.

Q4. Increased employees" satisfaction expected as a result of implementing the redesigned processes:

**Table 4.7: expectation on employee satisfaction expected**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	3	2.1	2.1	2.1
Agree	65	46.4	46.4	48.6
Neutral	37	26.4	26.4	75.0
Disagree	29	20.7	20.7	95.7
strongly disagree	6	4.3	4.3	100.0
Total	140	100.0	100.0	

**Graph 4.6: employee satisfaction**

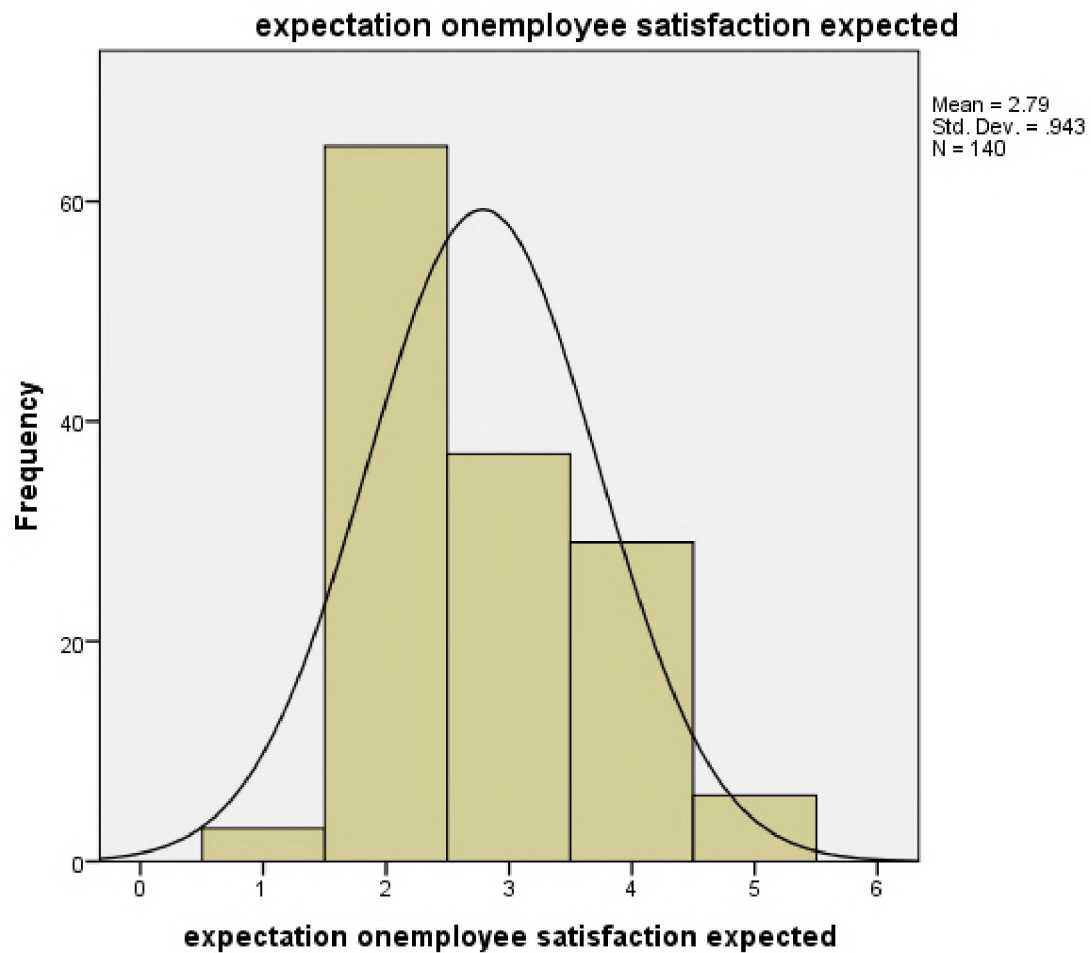


Table 4.7 and Graph 4.6 depicts that totally 68 (48.6%) of employees respondents agreed that increased employees' satisfaction have been observed.

**Table 4.8: Statistics**

	expectation on cycle cost reduction expected	expectation on cycle time reduction expected	expectation on service quality expected	expectation on employee satisfaction expected
N				
Valid	140	140	140	140
Missing	0	0	0	0
Mean	2.95	3.49	3.49	2.79
Std. Deviation	1.219	.917	1.056	.943

The items in the statistics Table 4.8 and Graphs 4.3-4.6 which had mean scores of above 3.0 representing disagreement include: time reduction and service quality expected. These two items were considered by the respondents that WWCE hasn't achieved them after implementation of BPR. The other remaining two items cost reduction and employee satisfaction had a mean of 2.95 and 2.79 respectively. This shows that the two items were considered neutral by respondents.

The findings in the statistics table show that all the items expected after implementation of BPR are close together around the standard deviation of one. Hence, the items do not significantly vary from the mean. This demonstrates that all of the items can be considered significant in relation to each other since the respective standard deviations are close together. The results hence show all of four items expected to be achieved after implementation of BPR are considered significant by respondents. The management of WWCE should thus ensure the above four items have been achieved and considered well in order to succeed in BPR implementation at WWCE.



## **4.6 Measurement to evaluate performance**

Employees were asked to identify the measurement put into practice to evaluate their performance.

According to Tables 4.9-4.11 and Graphs 4.7-4.9, 42.9% of the respondents disagreed that time is the best measurement to evaluate their performance. Also 53 out of 140, i.e. 42.9% of the respondents, consider that cost is not one of the measurements for performance evaluation. Also 43.6% respondents did not agree that quality is one of the measurements for performance evaluation.

The interview made for the interviewee and documents reviewed concerning if process owners established level of performance measurement system for the whole processes by calculating different measurement mechanism like cycle time, quality and cost; and according to the opinion of the interviewee and the documents review there was little and no proper implementation and follow up as well on performance measurement system to evaluate performance.

According to the opinion of the interviewee some said it's due to the weakness of BPR implementing team in the WWCE while the rest said that it is due to little commitment from process owners, less understanding about the program and also lack of training before and after BPR, which is similar to the data obtained from documents.

From respondent, employees and process owners, the documents reviewed as well, one can infer that before and after BPR no proper implementation and follow up was done on performance measurement system to evaluate performance in WWCE that needs managements' attention in the near future in order to achieve organizational performance.

Q1. Did the measurement put into practice to evaluate your performance in terms of time?

**Table 4.9: measurement put in terms of time**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	12	8.6	8.6	8.6
Agree	27	19.3	19.3	27.9
Neutral	41	29.3	29.3	57.1
Disagree	56	40.0	40.0	97.1
strongly disagree	4	2.9	2.9	100.0
Total	140	100.0	100.0	

**Graph 4.7: measurement in terms of time**

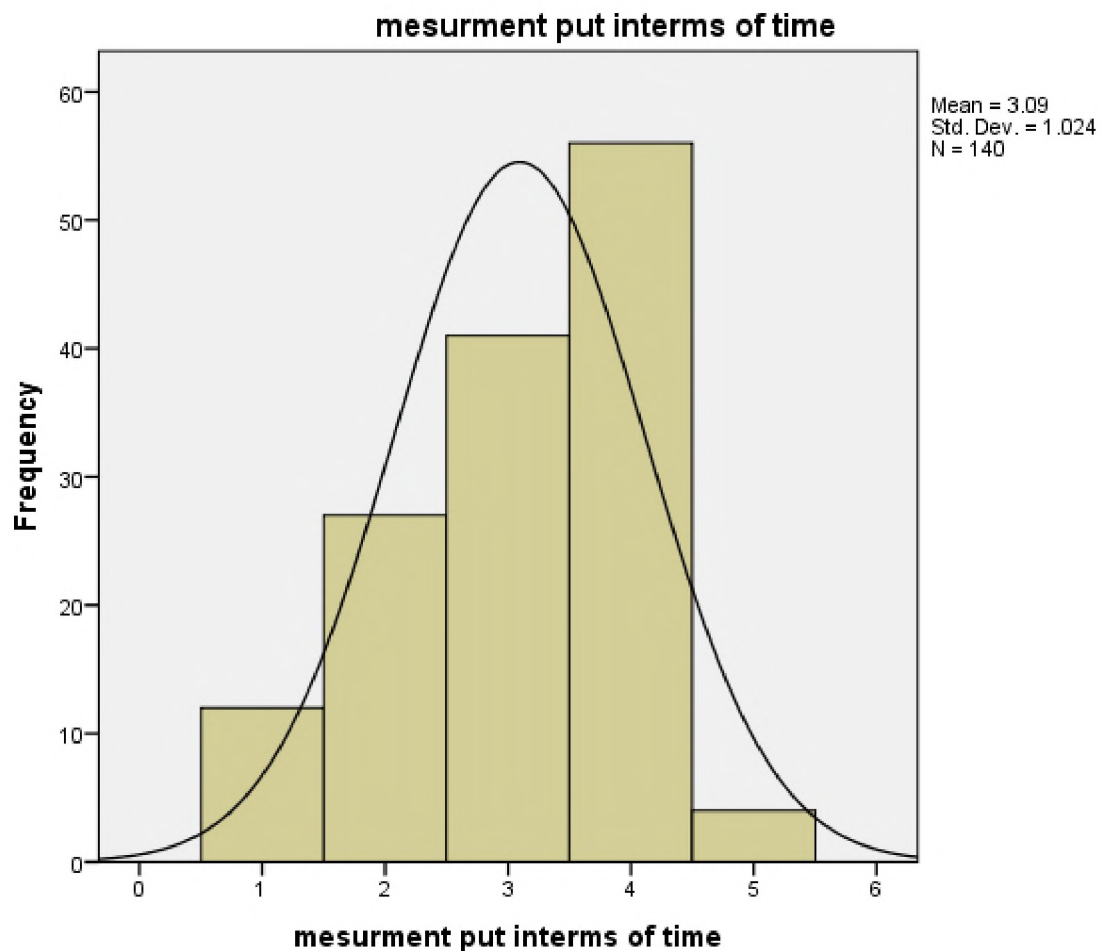


Table 4.9 depicts only 39 (27.9%) employees of the respondents agreed that time is the best measurement to evaluate their performance. Whereas 60 (42.9%) respondents did not agree that time is one of the measurements for performance evaluation.

Q2. Did the measurement put into practice to evaluate your performance in terms of cost?

**Table 4.10: measurement put in terms of cost**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	13	9.3	9.3	9.3
Agree	25	17.9	17.9	27.1
Neutral	42	30.0	30.0	57.1
Disagree	53	37.9	37.9	95.0
strongly disagree	7	5.0	5.0	100.0
Total	140	100.0	100.0	

**Graph 4.8: measurement in terms of time**

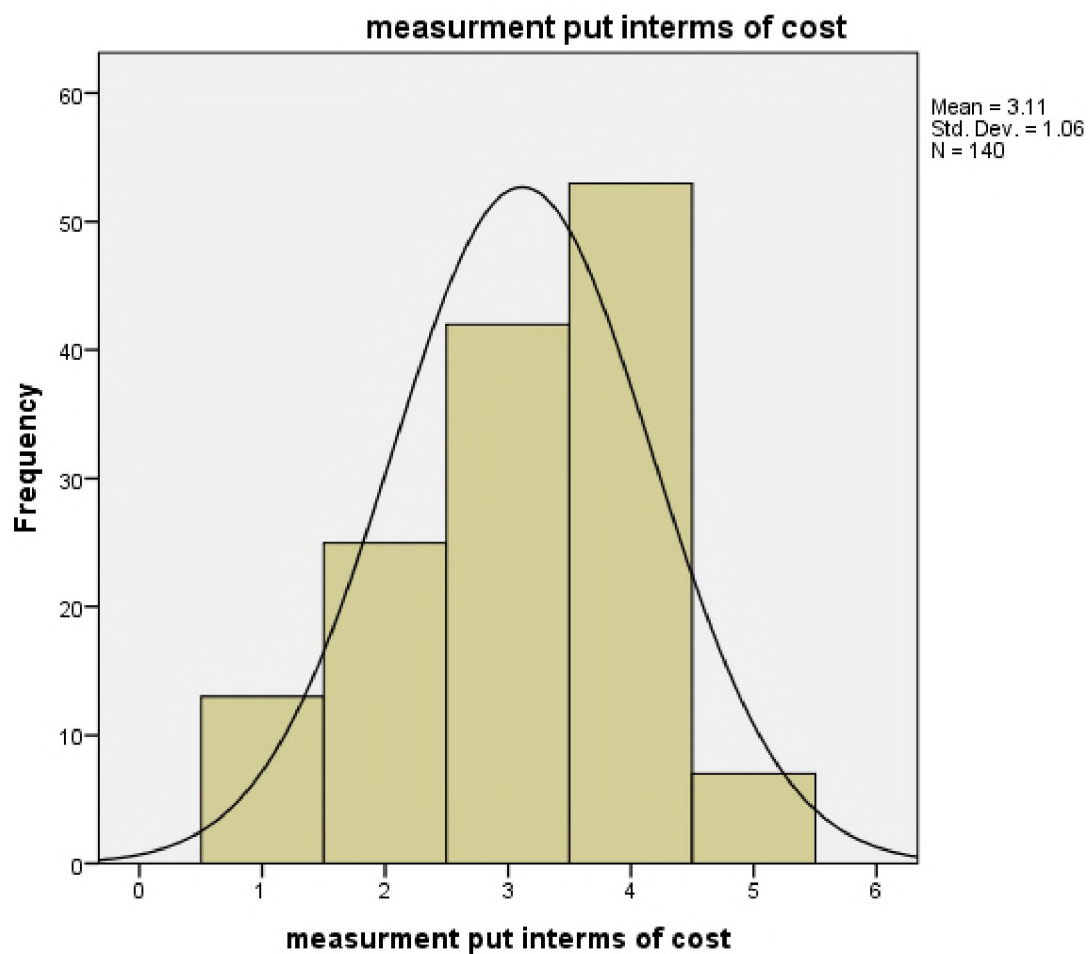


Table 4.10 depicts only 38 (27.1%) employees of the respondents agreed that cost is the

best measurement to evaluate their performance. Whereas 60 (42.9%) respondents did not agree that cost is one of the measurements for performance evaluation.

Q3. Did the measurement put into practice to evaluate your performance in terms of quality?

**Table 4.11: measurement put in terms of quality**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	10	7.1	7.1	7.1
Agree	19	13.6	13.6	20.7
Neutral	50	35.7	35.7	56.4
Disagree	48	34.3	34.3	90.7
strongly disagree	13	9.3	9.3	100.0
Total	140	100.0	100.0	

**Graph 4.9: measurement in terms of quality**

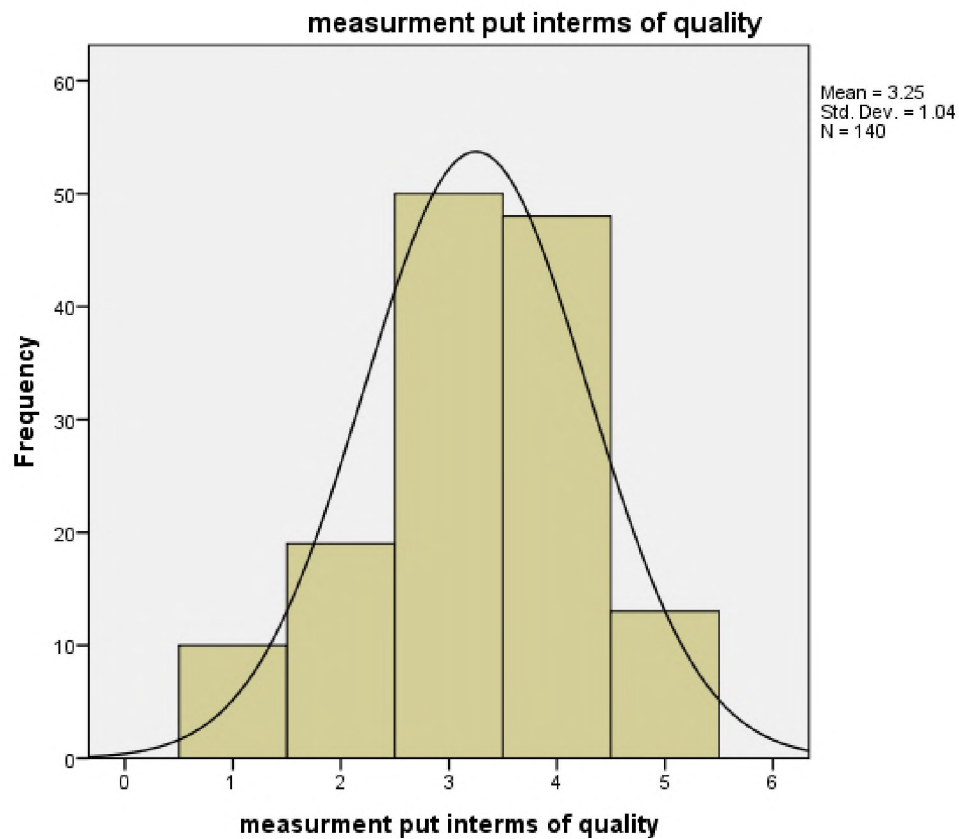


Table 4.11 depicts only 29 (20.7%) employees of the respondents agreed that quality is the best measurement to evaluate their performance. Whereas 61 (43.6%) respondents did not agree that quality is one of the measurements for performance evaluation.

**Table 4.12: Statistics**

		measurement put in terms of quality	measurement put in terms of cost	measurement put in terms of time
N	Valid	140	140	140
	Missing	0	0	0
Mean		3.25	3.11	3.09
Std. Deviation		1.040	1.060	1.024

All of the three items: measurement put into practice to evaluate performance in terms of quality, cost and time had mean scores of above 3.0 representing disagreement. These all three items were considered by the respondents that WWCE hasn't achieved it after implementation of BPR.

The findings in the statistics Table 4.12 and Graphs 4.7-4.9 show that all the three items expected after implementation of BPR are close together around the standard deviation of one. Hence, the items do not significantly vary from the mean. This demonstrates that all of the items expected can be considered significant in relation to each other since the respective standard deviations are close together. The results hence show all of the three items expected to be achieved after implementation of BPR are considered significant by respondents. The management of WWCE should thus ensure whether the above three items have been achieved and considered well in order to succeed in BPR implementation at WWCE.

## **4.7 CHANGE ON SKILL, BEHAVIOR, ATTITUDE AND TEAM COORDINATION**

The second objective of the study sought to reveal how Business Process Reengineering affected employee's skills and knowledge, behavior, attitude and team coordination. The respondents were required to rate the effect. A Likert scale of 5 was used to capture the data as follows:

1. Strongly agree
2. Agree

3. Neutral
4. Disagree
5. Strongly disagree

The higher the mean score, the lower was the effect. Standard deviation was used to determine the varying degrees of the respondents' perception of the effect as a result of BPR implementation. From the respondents who filled the questionnaire the results are displayed in the tables and graphs below:

Q1. improvement on employee's behavior and attitude

**Table 4.13: expectation on improvement on employee behavior and attitude**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	33	23.6	23.6	23.6
Agree	55	39.3	39.3	62.9
Neutral	11	7.9	7.9	70.7
Disagree	28	20.0	20.0	90.7
strongly disagree	13	9.3	9.3	100.0
Total	140	100.0	100.0	

**Graph 4.10: improvement on employee behavior and attitude**



Table 4.13 shows whether improvement observed on employees behavior and attitude or not. Accordingly, totally 88 (62.9%) respondents, said that improvement observed on employees behavior and attitude.

Q2. change in skill and knowledge of employees

**Table 4.14: expectation on change in skill and knowledge of employee**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	11	7.9	7.9	7.9
Agree	9	6.4	6.4	14.3
Neutral	66	47.1	47.1	61.4
Disagree	26	18.6	18.6	80.0
strongly disagree	28	20.0	20.0	100.0
Total	140	100.0	100.0	

**Graph 4.11: expectation on change in skill and knowledge of employee**

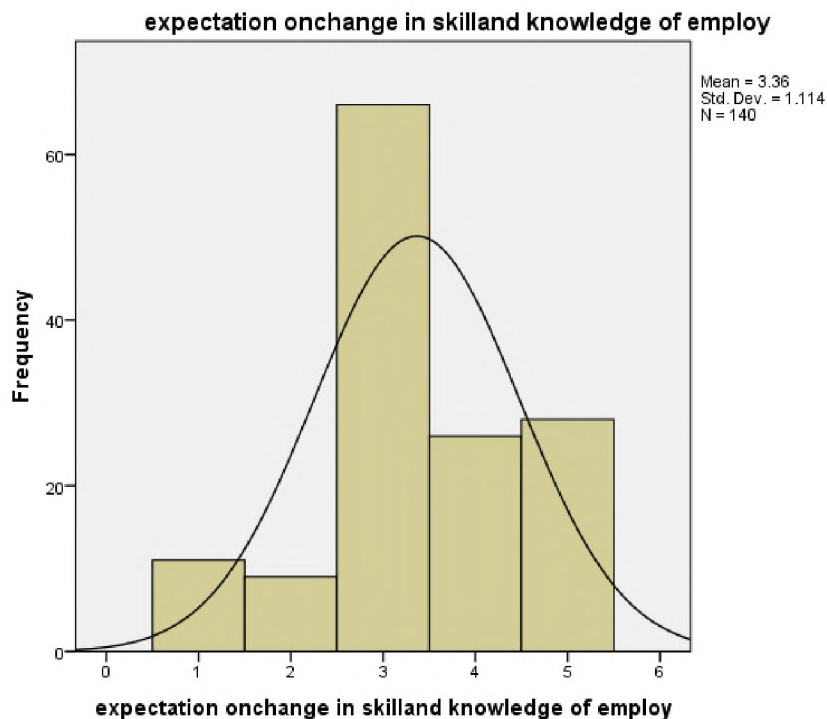


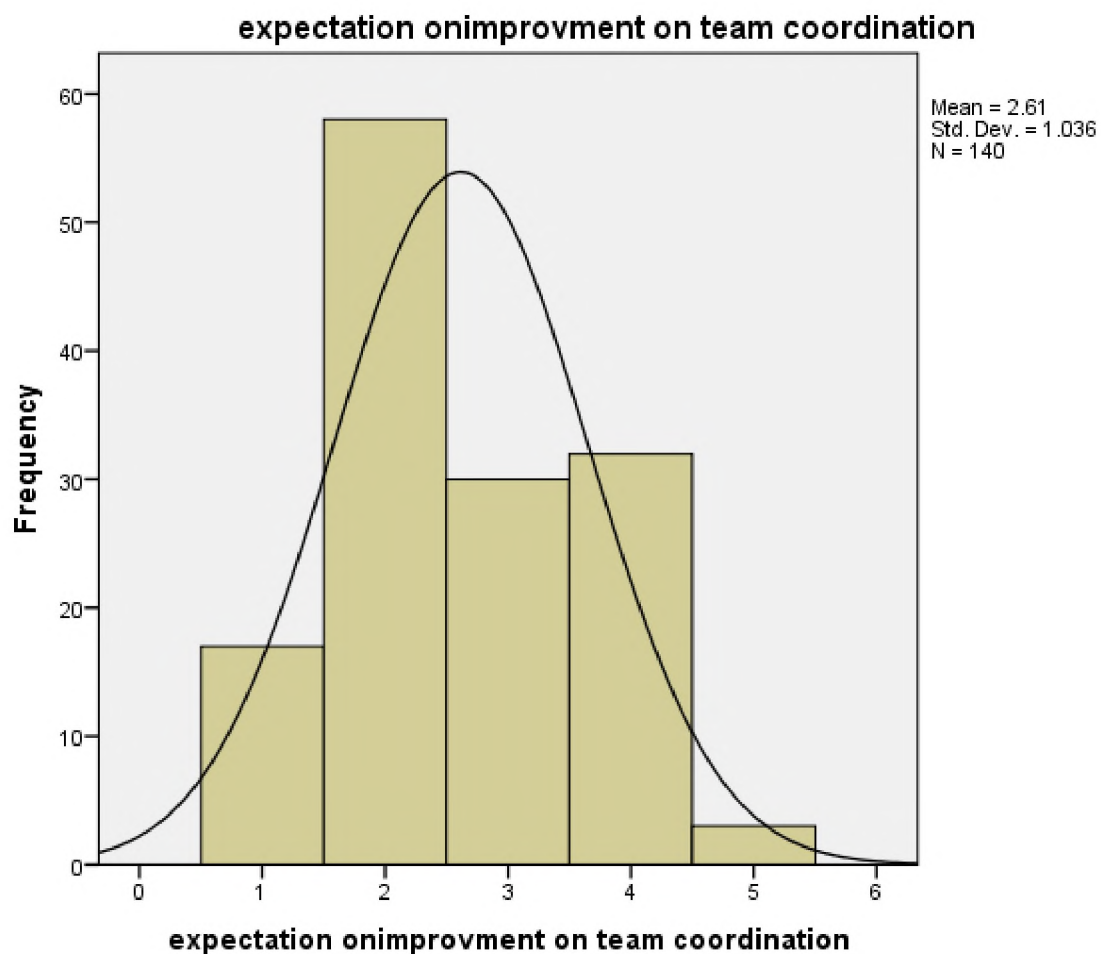
Table 4.14 shows only 20 (14.3%) employees agreed that change in skill and knowledge of employees observed after the implementation of BPR.

Q3. improvement on team coordination and management system?

**Table 4.15: expectation on improvement on team coordination**

	Frequency	Percent	Valid Percent	Cumulative %
strongly agree	17	12.1	12.1	12.1
Agree	58	41.4	41.4	53.6
Neutral	30	21.4	21.4	75.0
Disagree	32	22.9	22.9	97.9
strongly disagree	3	2.1	2.1	100.0
Total	140	100.0	100.0	

**Graph 4.12: expectation on team coordination**





The above table shows, totally 75 (53.6%) respondents agreed that there were major improvements on team coordination and management system.

#### Q4. Observed radical change

**Table 4.16: expectation on radical change**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	3	2.1	2.1	2.1
Agree	11	7.9	7.9	10.0
Neutral	82	58.6	58.6	68.6
Disagree	29	20.7	20.7	89.3
strongly disagree	15	10.7	10.7	100.0
Total	140	100.0	100.0	

**Graph 4.13: expectation on radical change**

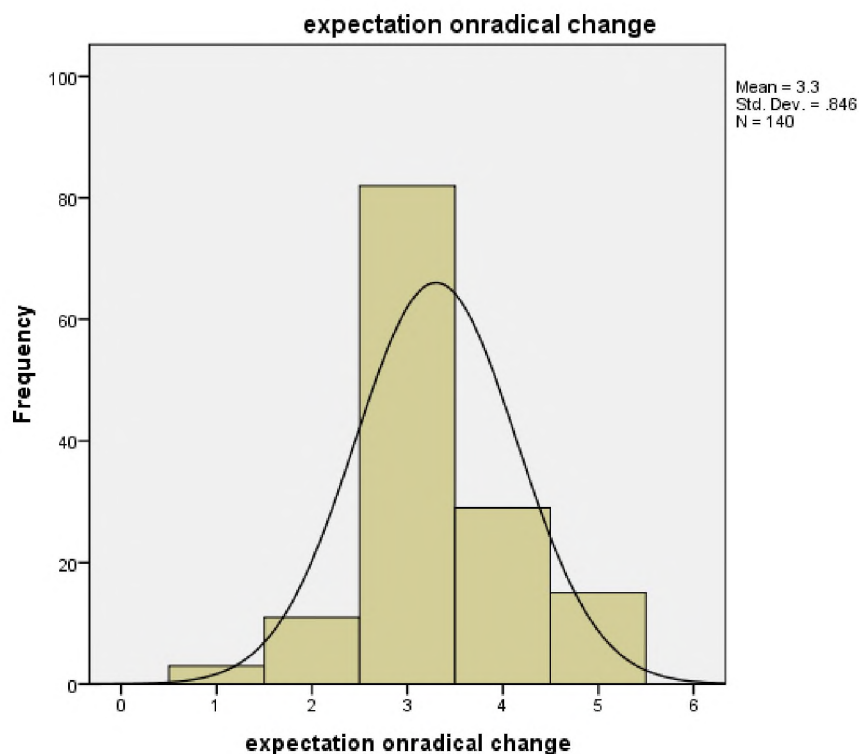


Table 4.16 depicts that only 14 (10%) employees of respondents agreed that radical change has observed.

**Table 4.17: Statistics**

	expectation on improvement on employee behavior and attitude	expectation on change in skill and knowledge of employ	expectation on improvement on team coordination	expectation on radical change
N	Valid 140 Missing 0	140 0	140 0	140 0
Mean	2.52	3.36	2.61	3.30
Std. Deviation	1.300	1.114	1.036	.846

From the statistics Table 4.17 and Graphs 4.10 -13, the items which had mean scores of above 3.0 representing disagreement include: improvements on skill and knowledge, and observed radical change. These two items were considered by the respondents that WWCE hasn't achieved them after implementation of BPR that is in line with interview and document review results. The other remaining two items improvement on team coordination, and employee behavior and attitude had a mean of 2.52 and 2.61 respectively. This shows that the two items were considered neutral by respondents.

The findings in the statistics table show that all the items expected after implementation of BPR are close together around the standard deviation of one. Hence, the items do not significantly vary from the mean. This demonstrates that all of the items expected can be considered significant in relation to each other since the respective standard deviations are close together. The results hence show all of four items expected to be achieved after implementation of BPR are considered significant by respondents. The management of WWCE should thus ensure the above four items have been achieved and considered well in order to succeed in BPR implementation at WWCE.

#### **4.8 Personal gain after BPR**

The third objective of the study sought to reveal how management and employees benefited from a re-engineering process. The respondents were required to rate the effect. A Likert scale of 5 was used to capture the data as follows:

1. Strongly agree
2. Agree

3. Neutral

4. Disagree

5. Strongly disagree

The higher the mean score, the lower was the effect. Standard deviation was used to determine the varying degrees of the respondents' perception of the effect as a result of BPR implementation. From the respondents who filled the questionnaire the results are displayed in the tables and graphs below:

Q1. benefit with salary increment

**Table 4.18: gain on salary increment**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	15	10.7	10.7	10.7
Agree	112	80.0	80.0	90.7
Neutral	2	1.4	1.4	92.1
Disagree	6	4.3	4.3	96.4
strongly disagree	5	3.6	3.6	100.0
Total	140	100.0	100.0	

**Graph 4.14: gain on salary increment**



Table 4.18 depicts that only 127 (90.7%) employees of respondents agreed that there have been salary increment after BPR implementation.

Q2 .empowerment

**Table 4.19: gain on empowerment**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	5	3.6	3.6	3.6
Agree	87	62.1	62.1	65.7
Neutral	18	12.9	12.9	78.6
Disagree	12	8.6	8.6	87.1
strongly disagree	18	12.9	12.9	100.0
Total	140	100.0	100.0	

**Graph 4.15: gain on empowerment**

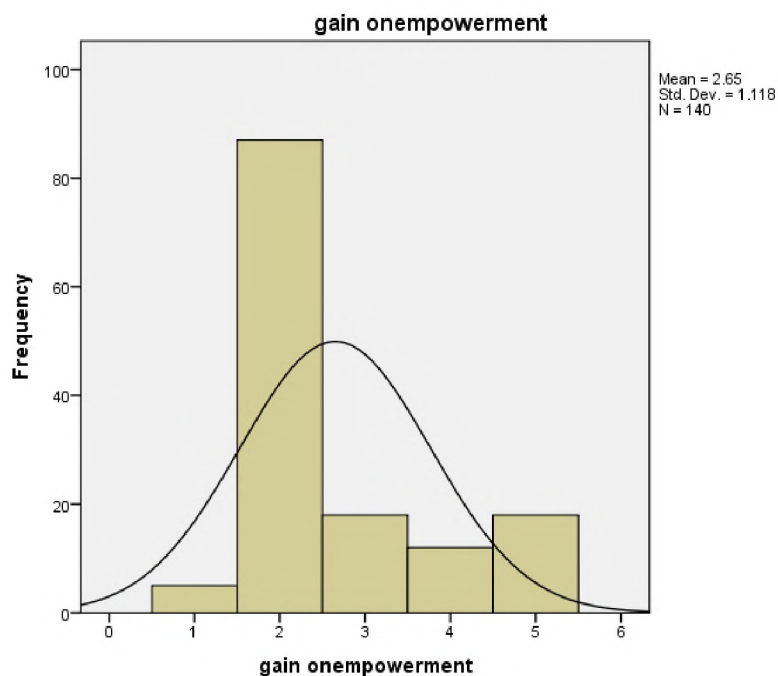


Table 4.19 depicts that 92 (65.7%) employees of respondents agreed that there have been empowerment after BPR implementation.

Q3. work satisfaction

**Table 4.20: gain on work satisfaction**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	15	10.7	10.7	10.7
Agree	79	56.4	56.4	67.1
Neutral	22	15.7	15.7	82.9
Disagree	11	7.9	7.9	90.7
strongly disagree	13	9.3	9.3	100.0
Total	140	100.0	100.0	

**Graph 4.16: gain on work satisfaction**

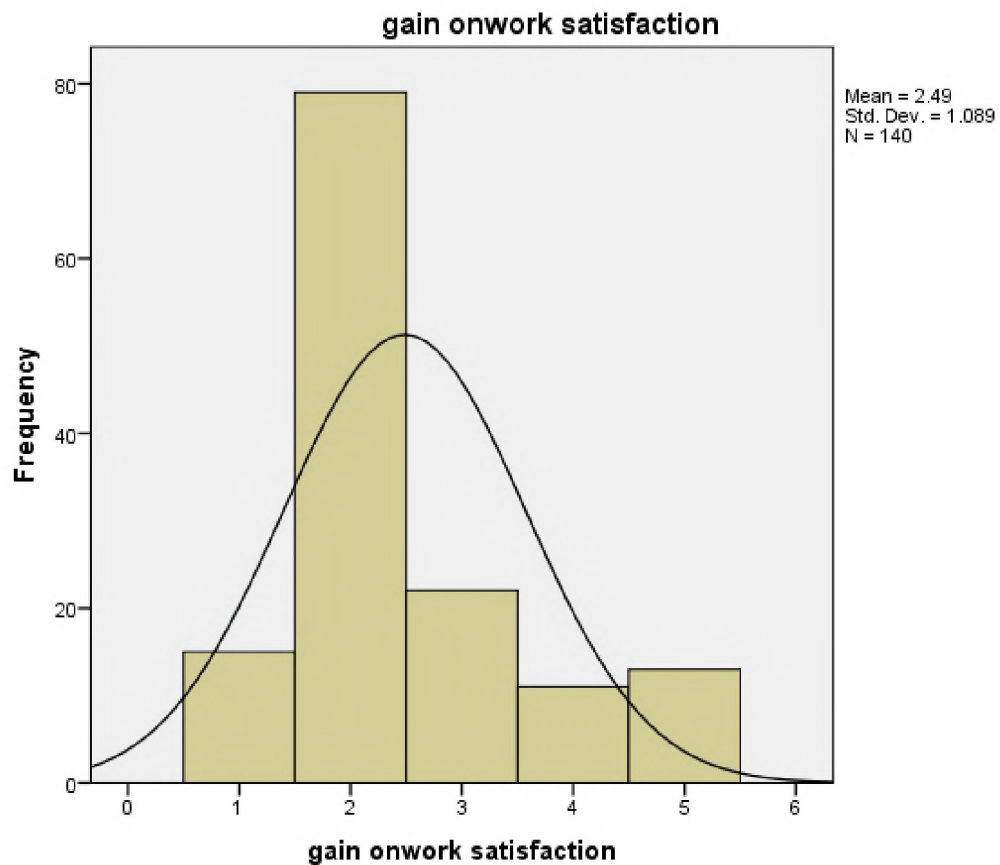


Table 4.20 depicts that 94 (67.1%) employees of respondents agreed that there have been work satisfaction after BPR implementation.

Q4. compensation

**Table 4.21: gain on compensation**

	Frequency	Percent	Valid Percent	Cumulative Percent
strongly agree	11	7.9	7.9	7.9
Agree	80	57.1	57.1	65.0
Neutral	4	2.9	2.9	67.9
Disagree	22	15.7	15.7	83.6
strongly disagree	23	16.4	16.4	100.0
Total	140	100.0	100.0	

**Graph 4.17: gain on compensation**

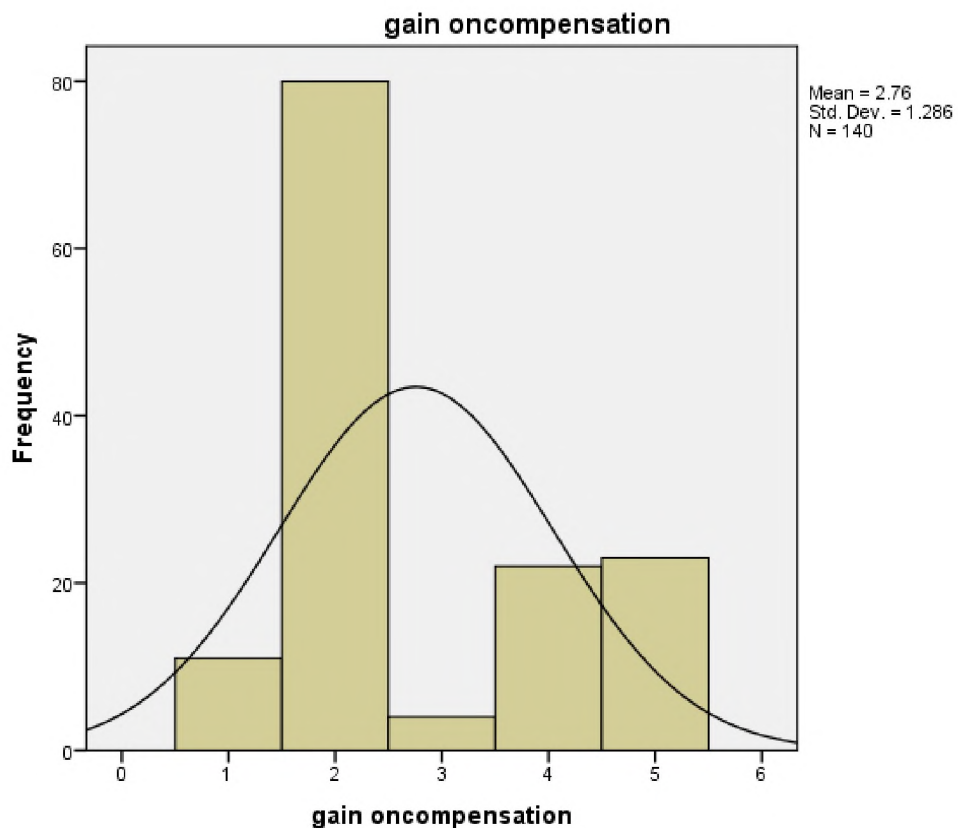


Table 4.21 depicts that 91 (65%) employees of respondents agreed that there have been compensation after BPR implementation.

**Table 4.22: Statistics**

	gain on salary increment	gain on empowerment	gain on work satisfaction	gain on compensation
<b>N</b>				
Valid	140	140	140	140
Missing	0	0	0	0
<b>Mean</b>	2.10	2.65	2.49	2.76
<b>Std. Deviation</b>	.780	1.118	1.089	1.286

As indicated in the above statistics Table 4.22 and graphs 4.14 - 4.17, all of the four items: gain on salary, empowerment, work satisfaction and compensation had mean scores of below 3.0 which represent neutral.

The findings in the statistics table show that all the items expected after implementation of BPR are close together around the standard deviation of one. Hence, the items do not significantly vary from the mean. This demonstrates that all of the items expected can be considered significant in relation to each other since the respective standard deviations are close together. The results hence show all of four items expected to be achieved after implementation of BPR are considered significant by respondents.

The question rose for the interviewee and reviewed documents reveal that management members benefitted in salary, compensation, empowerment after BPR in the WWCE. In addition they have gotten work satisfaction.

From respondent, employees and management members, one can deduced after BPR most have beneficiary especially in salary increment, empowerment and compensation.

## **4.9 Regression analysis**

### **4.9.1 Radical change vs. Major effects due to BPR implementation**

Regression analysis is a statistical method that models the relationship between a dependent variable  $y$ , explanatory variables  $x_s$ , and a random term  $s$ . The model can be written as:

$$y = P_i + P|x| + P_2x_2 + f P_p x_p + E$$

Where:

$P_i$  is the intercept ("constant" term),

$P_i$ s are the respective parameters of explanatory variables, and  $p$  is the number of parameters to be estimated.

From the study, it is possible to develop a regression model with an equation which represents the relationship between the radical change and the effect of BPR implementation. Thus from the respondents' data, it is possible to formulate a regression model shown below:

**Table: 4.23 Regression model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.935 <sup>a</sup>	.874	.869	.306	.874	154.225	6	133	.000

a. Predictors ( $x_s$ ): (Constant),

- Expectation on cycle time reduction expected.
- Expectation on cycle cost reduction expected.
- Expectation on service quality expected,
- Expectation on improvement on employee behavior and attitude.
- Expectation on change in skill and knowledge of employ.
- Expectation on improvement on team coordination,

b. Dependent Variable: (y)

radical change

From Table 4.23 it is possible to conclude that: The value of R-squared is 0.874 which implies that 87.4% of the dependent variable can be explained by the explanatory variables. While the 12.6% that remained unexplained could be attributed to the random fluctuation on other unspecified variable. The p-value (sig) is 0.00 which less than 0.05 test significant level that is 95% confidence level implying that the results can be used to make statistical inference.



**Table: 4.24 Coefficient for the Regression**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.956	.128		7.444	.000
expectation on cycle					
cost reduction expected	.234	.070	.338	3.355	.001
X1					
expectation on cycle					
time reduction expected	.175	.090	.190	1.951	.053
X2					
expectation on service					
quality expected X <sub>3</sub>	.199	.109	.248	1.829	.070
1 expectation on					
improvement on					
employee behavior and	.144	.058	.221	2.471	.015
attitude X <sub>4</sub>					
expectation on change					
in skill and knowledge	.094	.086	.124	1.097	.275
of employ X <sub>5</sub>					
expectation on					
improvement on team	.126	.087	.154	1.441	.152
coordination X <sub>6</sub>					

a. Dependent Variable: ( y)

radical change

From the above regression model, the equation becomes:

$$y = 0.956 + 0.234X_1 + 0.175x_2 + 0.199x_3 + 0.144x_4 + 0.094x_5 + 0.126x_6$$

Where:

Y represents radical change and X represents the major effects of BPR as indicated in the table. The regression model shows that all the predictors  $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ,  $X_5$ , and  $X_6$  have a positive effect on the radical change of WWCE's performance.

#### **4.9.2 Employee satisfaction vs. change on skill, behavior, attitude and team coordination**

From the study, it is possible to develop a regression model with an equation which represents the relationship between the employee satisfaction and the effect of BPR implementation. Thus from the respondents' data, it is possible to formulate a regression model shown below:

**Table: 4.25 Regression model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.942 <sup>a</sup>	.888	.886	.319	.888	360.211	3	136	.000

- a. Predictors: (Constant),
- Expectation on improvement on employee behavior and attitude.
  - Expectation on change in skill and knowledge of employ.
  - Expectation on improvement on team coordination,

b. Dependent Variable: employee satisfaction

From Table 4.25 it is possible to conclude that: The value of R-squared is 0.888 which implies that 88.8% of the dependent variable can be explained by the explanatory variables while the 11.2% that remained unexplained could be attributed to the random fluctuation on other unspecified variable. The p-value (sig) is 0.00 which less than 0.05 test significant level that is 95% confidence level implying that the results can be used to make statistical inference.

**Table: 4.26 Coefficient for the Regression**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.839	.097		8.632	.000
expectation on improvement on employee behavior and attitude $X_1$	.258	.053	.356	4.877	.000
1 expectation on change in skill and knowledge of employ $X_2$	.193	.066	.228	2.920	.004
expectation on improvement on team coordination $X_3$	.744	.077	.817	9.640	.000

a. Dependent Variable: employee satisfaction

a. Dependent Variable: employee satisfaction

From the above regression model, the equation becomes:

$$y = 0.839 + 0.258X_1 + 0.193x_2 + 0.744x_3$$

Where:

Y represents employee satisfaction and X represents the various effects of BPR as indicated in the table. The regression model shows that the predictors  $X_1$ ,  $X_2$ , and  $X_3$  have a positive effect on employee satisfaction.

#### **4.9.2 Employee satisfaction vs. Personal gain**

From the study, it is possible to develop a regression model with an equation which represents the relationship between the employee satisfaction and personal gain from the effect of BPR implementation. Thus from the respondents' data, it is possible to formulate a regression model shown below:

**Table: 4.27 Regression model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.893 <sup>a</sup>	.798	.793	.429	.798	178.887	3	136	.000

a. Predictors: (Constant), gain on compensation, gain on salary increment, gain on empowerment

b. Dependent Variable: on employee satisfaction

From Table 4.27 it is possible to conclude that: The value of R-squared is 0.798 which implies that 79.8% of the dependent variable can be explained by the explanatory variables. While the 20.2% that remained unexplained could be attributed to the random fluctuation on other unspecified variable. The p-value (sig) is 0.00 which is less than 0.05 test significant levels that is 95% confidence level implying that the results can be used to make statistical inference.

**Table: 4.28 Coefficient for the Regression**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.746	.108		6.922	.000
gain on salary increment X <sub>1</sub>	.148	.064	.123	2.316	.022
gain on empowerment X <sub>2</sub>	.291	.108	.345	2.701	.008
gain on compensation X <sub>3</sub>	.347	.088	.474	3.960	.000

a. Dependent Variable: employee satisfaction

From the above regression model, the equation becomes:

$$y = 0.746 + 0.148X_1 + 0.291x_2 + 0.347x_3$$

Where:

Y represents employee satisfaction and X represents personal gain from the effects of BPR implementation as indicated in the table. The regression model shows all the predictors  $X_1$ ,  $X_2$ , and  $X_3$  have a positive effect on the employee satisfaction.

## **CHAPTER 5**

### **SUMMARY, CONCLUSION AND SUGGESTIONS**

This chapter discusses the summary of findings, conclusions and recommendations of the research study.

#### **5.1 SUMMARY**

The summary of the major findings captures the major objectives of the study and these are; how Business Process Reengineering has had an effect on WWCE performance when measured in terms of cost, cycle time, and quality, to assess how Business Process Reengineering affected employee's skills and knowledge, behavior, attitude and team coordination, and how management and employees benefited from a re-engineering.

- From the findings it is better to say that, after BPR implementation there were increased employees' satisfaction which may increase customer satisfaction and organizational performance.
- Finding related to major changes after implementation of BPR in the view of employees and the data obtained from the interview and document review, one can conclude that there were major changes regarding behavior, team work and management system; but regarding radical change in the study area it was seen only an incremental improvement.
- From this study one can also summaries that after implementation of BPR employee's salary increment has made a major change. Further compensation and empowerment are among the opportunities that the employees have gained in their work area.
- This study has also shown as majority of respondents did not agree that time and quality is the best measurement to evaluate their performance. In addition to this, in the interviewee responses that included processes owner's opinions and some employees said that still the great weakness was that there is no strong performance evaluation system implemented in the WWCE. Another finding is employees and process owners had not received adequate training as a result of the BPR

implementation. Little commitment from process owners, less understanding about the program and also lack of training before and after BPR

## **5.2 CONCLUSION**

Based on the results, one is led to the conclusion that:

- Finding related to major changes after implementation of BPR in the view of employees and the data obtained from the interview and document review, that there were major changes in WWCE regarding behavior, team work and management system; but regarding radical change in the study area it was seen only an incremental improvement.
- WWCE is not emphasizing some of the most important activities and tasks recommended in the literature as basic underpinnings for BPR, such as using time as a competitive weapon, offering adequate training as a result of the BPR implementation, and also adapting strong performance measurement with adequate strategy for proper implementation and follow up. Therefore, one may conclude that therein lays a major reason why WWCE's and other many of the BPR project goals and objectives have been only modestly accomplished.

## **5.3 RECOMENDATION:**

This study has identified the following recommendations

- Employees' motivation through reward system plays a crucial role in facilitating reengineering efforts.  
The WWCE's incentive & reward system should be strengthened in respect of salary increment, promotion, empowerment & compensation. Hence WWCE shall consider reward system which must be widespread, fair and encouraging harmony among employees.
- WWCE must facilitate different types of on job as well as off job training for process owners, employees and customers and stakeholders in order to understand that Business Process Reengineering has become useful weapon for any organization that is seeking for improvement in their current organizational performance.

- The WWCE shall consider radical change in respect of its employees' overall performance evaluation.
- Finally, the WWCE shall empower its employee so as to successfully implement BPR.
- Needs commitment from process owners, understanding about the BPR and also adequate training on BPR.



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# ANNEX-QUESTIONNAIER

## St. Merry university, Graduate study

### (Management of Business Administration)

### Questionnaire

Title of study: A study on THE EFFECT OF BUSINESS PROCESS

REENGINEERING (BPR) ON PERFORMANCE of Water Works Construction Enterprise

(WWCE)

Researcher: Sultan Mohammed

#### Purpose of the Questionnaire:

This questionnaire will serve as an aid for the researcher in the understanding Of THE EFFECT OF BUSINESS PROCESSREENGINEERING (BPR) ON PERFORMANCE of Water Works Construction Enterprise (WWCE).

Confidentiality of Research records: Your responseS to this questionnaire will remain completely confidential. No need to write your name.

Thank you for your participation and cooperation for this study.

#### Part-one personal information

Please put x mark in the boxes to indicate your personal information:

1- sex:                      male ☐ female ☒

2- Age                      18-35 ☐                      36-45 ☐                      46-55 ☐ Greater than 55|

3-      Educational qualification

Below Diploma ☐                      First degree ☐                      PhD| |

Diploma ☐                      MA/MSc ☐                      other| |

4-      Present position \_\_\_\_\_

5-Years of experience

Up to 2 years |

3-5 years |

6-8 years |

9-10 years |

above 10 years |

## Part- two: Questions

### Respondent's expectation on major improvements after BPR

1. Cost reduction of the processes expected as a result of implementing the redesigned processes:

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

2. Process cycle time reduction expected as a result of implementing the redesigned processes:

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

3. Increased service quality expected as a result of implementing the redesigned processes:

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

4 Increased employees" satisfaction expected as a result of implementing the redesigned processes:

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

### Respondent's expectation on major changes after implementation of BPR

5. Did you observe improvement on employee's behavior and attitude

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

6. Did you observe change in skill and knowledge of employees?

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

7. Did you observe improvement on team coordination and management system:

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

8. Did you observe radical change?

☐ Strongly agree      ☐ Agree      ☐ Neutral      ☐ Disagree      ☐ Strongly disagree

agree                      Agree                      disagree

### Personal gain after BPR

9. Did you benefit with salary increment:

☐ Strongly ☐                      ☐ Neutral ☐ Disagree ☐ Strongly  
agree                      Agree                      disagree

10. Did you have empowerment:

☐ Strongly ☐                      ☐ Neutral ☐ Disagree ☐ Strongly  
agree                      Agree                      disagree

11. Did you have work satisfaction?

☐ Strongly ☐                      ☐ Neutral ☐ Disagree ☐ Strongly  
agree                      Agree                      disagree

12. Did you have compensation?

☐ Strongly                      ☐                      ☐ Neutral                      ☐ Disagree                      ☐ Strongly  
agree                      Agree                      disagree

### Measurement to evaluate performance

13. Did the measurement put into practice to evaluate your performance in terms of time:

☐ Strongly                      ☐                      ☐ Neutral                      ☐ Disagree                      ☐ Strongly  
agree                      Agree                      disagree

14. Did the measurement put into practice to evaluate your performance in terms of cost:

☐ Strongly ☐                      ☐ Neutral ☐ Disagree ☐ Strongly  
agree                      Agree                      disagree

15. Did the measurement put into practice to evaluate your performance in terms of quality:

☐ Strongly ☐                      ☐ Neutral ☐ Disagree ☐ Strongly  
agree                      Agree                      disagree